REMARKS

The Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

I.   Status of the Claims

Claim 1 is amended to recite that the weight composition ratio of a segment having an acid group to a segment substantially free from acid groups is from 10:90 to 33:67. Support for the amendment can be found, for example, in first five lines in paragraph [0053], and Examples 1-6 in the Specification.

II.   Claim Rejections – 35 U.S.C. § 102

Claims 1-13 are rejected under 35 U.S.C. § 102(B) as being anticipated by Hirano (US 7,258,941), which is based on Ube, WO/2002/091507, and Kinouchi (2005/0069780), which is based on Ube, WO2003/046080. The Applicants disagree and traverse the rejections.

Without acquiescing to the grounds of rejections, the Applicants have amended independent claim 1 to recite the weight composition ratio in the copolymer being from 10:90 to 33:67. Thus, the weight fraction of the segment having an acid group ranges from about 0.1 [i.e., 1/(1+9)] to about 0.33. [i.e., 33/(33+67)]. The block copolymer of the present application shows excellent performances in various properties such as proton conductivity (*see e.g.*, Examples and paragraphs [0142-143]).

(i)   *Hirano does not anticipate the present claims*

Hirano discloses an aromatic polyether sulfone block copolymer comprising a hydrophilic segment containing sulfonic acid groups and a hydrophobic segment having no sulfonic acid groups, wherein the hydrophilic segment weight fraction W2 to hydrophobic segment weight fraction W1 ratio falls in the range of $0.6 < W2/W1 < 2.0$ (*see*, Abstract, Hirano). In fact, Hirano discloses the block copolymer having the hydrophilic segment weight fraction W2 of from 0.375 to 0.667. Thus, Hirano does not disclose any block copolymer wherein the weight composition

ratio of a segment having an acid group to a segment substantially free from acid groups is from 10:90 to 33:67.

Because Hirano does not teach every element recited in the claims, it cannot anticipate. The Applicants respectfully request that the anticipation rejections over Hirano be withdrawn.

(ii)   Kinouchi does not anticipate the present claims

Kinouchi discloses an aromatic polyether sulfone block copolymer consisting of at least one hydrophilic segment bearing cation-exchange groups and at least one hydrophobic segment free from cation-exchange groups, and polyelectrolyte compositions containing the block copolymer (*see*, Abstract, Kinouchi). Kinouchi expressly discloses aromatic polyester sulfone block copolymers containing a sulfonic acid group in Synthesis Examples 2-5.

The block copolymer prepared in Synthesis Example 2 of Kinouchi has a hydrophilic acid-containing segment weight fraction of 0.49, as calculated by 'H-NMR analysis. The weight fractions of the hydrophilic segment in Synthesis Examples 3-5, are 0.45, 0.38 and 0.46, respectively – the weight fraction can be calculated based on its ion exchange capacity (the procedure to calculate such weight fraction is illustrated in APPENDIX A attached herein). All of these fractions are greater than 0.33, as taught in the present application. Accordingly, Kinouchi does not teach the ratio between the segments as recited in the present claims.

Because Kinouchi does not teach every element recited in the claims, it cannot anticipate. The Applicants respectfully request that the anticipation rejections over Kinouchi be withdrawn.
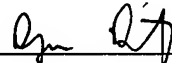
CONCLUSION

The Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by the credit card payment instructions in EFS-Web being incorrect or absent, resulting in a rejected or incorrect credit card transaction, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, the Applicants hereby petition for such extension under 37 C.F.R. § 1.136 and authorize payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

Date __11/6/08__   By __Benjamin Berkowitz__

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APPENDIX A

- Procedure to Calculate Hydrophilic Segment Weight Fraction –

Synthesis Example 3 of Kinouchi

In Synthesis Example 3, a solution of a prepolymer (A) and a solution of a prepolymer (B) are separately prepared. The structural unit of the prepolymer (A) is shown below. The structural unit of the prepolymer (B) should be shown below.

Prepolymer (A)
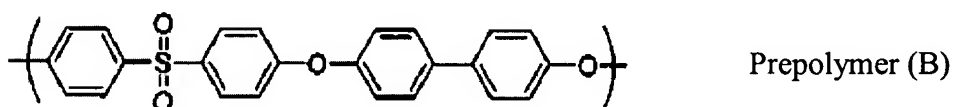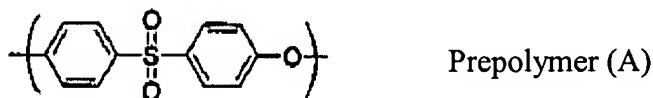
Prepolymer (B)

The solution of the prepolymer (A) is added to the solution of the prepolymer (B), and a copolymer BP-2 is prepared. The structural unit of the copolymer BP-2 should be shown below.

BP-2
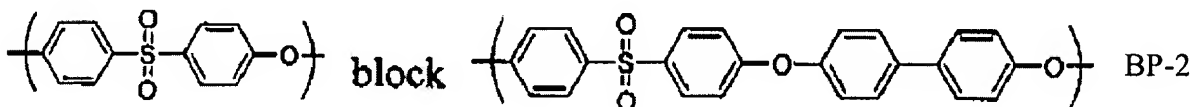
The copolymer BP-2 is dissolved in 100 ml of 9H sulfuric acid, followed by stirring at room temperature for 24 hours thereby to sulfonate the component derived from prepolymer (B), and thus a polymer BPS-2 is prepared. The structural unit of BPS-2 should be shown below, which has a repeat unit having sulfonic groups (hydrophilic unit) and a repeat unit free from sulfonic groups (hydrophobic unit).
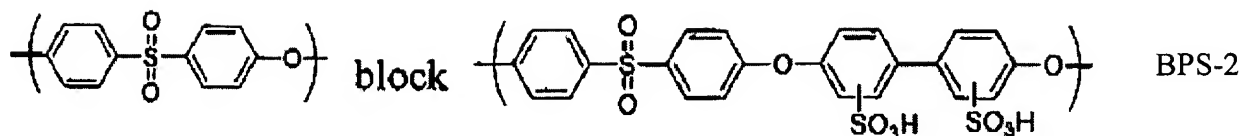
BPS-2

The hydrophilic unit of the copolymer BPS-2 is shown below.
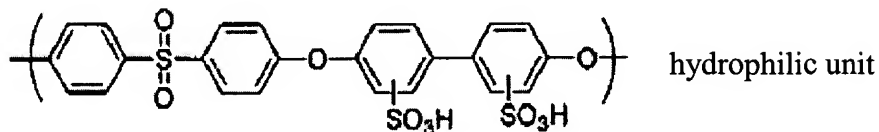
hydrophilic unit

The hydrophilic unit appears to have two sulfonic groups in the particular phenyl rings as shown above, since the sulfonation has been carried out in the sulfuric acid at room temperature.

As such, the molecular weight of the hydrophilic unit is determined to be 560.57.

Therefore, an ion exchange capacity (IEC) of the hydrophilic unit can be calculated as below.

$$2 \times 1000/560.57 = 3.56 \text{ [meq/g]}$$

Accordingly, the hydrophilic segment weight fraction of the copolymer BPS-2, which has the hydrophilic unit and the hydrophobic unit, can be calculated as below based on its whole IEC of 1.63.

$$(1.63/3.56) = \underline{0.45} \quad \text{Synthesis Example 3}$$

Synthesis Example 4 of Kinouchi

In the similar procedure as described above, a hydrophilic segment weight fraction of a copolymer BPS-3 prepared in Synthesis Example 4 is calculated.

$$(1.38/3.56) = \underline{0.38} \quad \text{Synthesis Example 4}$$

Synthesis Example 5 of Kinouchi

In the similar procedure as explained above, a hydrophilic segment weight fraction of a copolymer BPS-4 prepared in Synthesis Example 5 is calculated.

$$(1.67/3.56) \text{ gm } \underline{0.46} \quad \text{Synthesis Example 5}$$